

## Dr. Fan Cheng

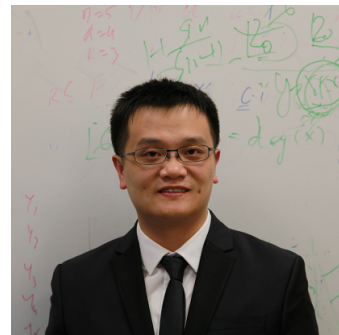
Research Professor (tenure track)  
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## Education

2008–2012 Ph.D., Information Engineering  
The Chinese University of Hong Kong, China  
Thesis title: Performance Bounds in Secure Network Coding  
Advisor: Prof. Raymond W. Yeung

2003–2007 B.S., Computer Science and Engineering  
Shanghai Jiao Tong University, China  
ACM Honored Class, 2003–2006

2000–2003 Provincial Science Experimental Class of Hubei  
Wugang No. 3 Middle School, Wuhan City, Hubei Province, China

## Research Interests

Information Theory, Cryptography, Networking, Machine Learning, Mathematical Physics

## Honors and Awards

Class I Prize, National Mathematics Competition, China, 2001

## Teaching

### Teaching Assistant, The Chinese University of Hong Kong, 2008–2012

IERG4180 Network Software Design and Programming  
IERG2810 Digital Systems Design Laboratory  
IERG5154 Information Theory  
ENGG2013 Advanced Engineering Maths

## Job Experience

- Mar. 2016 – July 2016    Postdoctoral Fellow  
Department of Information Engineering  
The Chinese University of Hong Kong  
Research area:            Information Theory
- Jan. 2015 – Mar. 2016    Research Fellow  
Department of Electrical and Computer Engineering  
National University of Singapore, Singapore  
Research areas:          Information Theory, Machine Learning
- Aug. 2012 – Dec. 2014    Postdoctoral Fellow  
Institute of Network Coding  
The Chinese University of Hong Kong  
Research areas:          Information Theory, Network Coding
- Jul. 2011 – Nov. 2011    Student Intern  
AT&T Labs - Research  
Florham Park, NJ 07932, USA  
Research area:            Distributed Storage
- Sep. 2005 – Jul. 2007    Student Intern  
BCMI Lab  
Department of Computer Science and Engineering  
Shanghai Jiao Tong University, China  
Research areas:          Face Detection, Gender Recognition
- Jul. 2005 – Sep. 2005    Student Intern  
Star of Tomorrow Program  
Incubation Group  
Microsoft Research Asia, Beijing, China  
Research areas:          Text Classification, Data Mining

## Professional activities

### Reviewer

IEEE Transactions on Information Theory  
IEEE International Symposium on Information Theory  
IEEE Information Theory Workshop  
IEEE International Symposium on Network Coding  
IEEE Communications Letters  
IEEE Conference on Decision and Control  
IEEE/ACM Transactions on Networking  
Security and Communication Networks  
Physica A: Statistical Mechanics and its Applications

## Conference Organization

1. Organizer, First Workshop on Entropy and Information Inequalities, The Chinese University of Hong Kong, April 15–17, 2013.

## Invited Talks

1. F. Cheng, “Some Progress on the Wiretap Network with Arbitrary Wiretap Sets,” Department of Electrical and Computer Engineering, National University of Singapore, Singapore, February 11, 2015.
2. F. Cheng, “Information Inequality and Wiretap Network,” School of Information Science and Technology, ShanghaiTech University, Shanghai, April 13, 2015.
3. F. Cheng, “A Numerical Study on the Wiretap Network with a Simple Network Topology,” Mathematical Tools of Information-Theoretic Security Workshop, Huawei Mathematical and Algorithmic Sciences Lab, Paris, France, September 23–25, 2015.
4. F. Cheng, “Beyond Shannon EPI: A Completely Monotone Conjecture,” Nexus of Information and Computation Theories, IHP Spring 2016 Thematic Program – Fundamental Inequalities and Lower Bounds Theme, The Henri Poincare Institute (IHP), France, February 15–26, 2016.
5. F. Cheng, “Information Theory and Its Application,” Department of Computer Science and Engineering, Shanghai Jiao Tong University, Shanghai, April 6, 2016.

## Publications

### Journal Papers

1. F. Cheng and V. Y. F. Tan, “A Numerical Study on the Wiretap Network with a Simple Network Topology,” *IEEE Trans. Inform. Theory*, vol. 62, no. 5, pp. 2481-2492, May 2016.
2. F. Cheng and Y. Geng, “Higher Order Derivatives in Costa’s Entropy Power Inequality,” *IEEE Trans. Inform. Theory*, vol. 61, no. 11, pp. 5892-5905, Nov. 2015.
3. F. Cheng, R. W. Yeung, and K. W. Shum, “Imperfect Secrecy in Wiretap Channel II,” *IEEE Trans. Inform. Theory*, vol. 61, no. 1, pp. 628-636, Jan. 2015.
4. F. Cheng and R. W. Yeung, “Performance Bounds on a Wiretap Network with Arbitrary Wiretap Sets,” *IEEE Trans. Inform. Theory*, vol. 60, no. 6, pp. 3345-3358, Jun. 2014.
5. F. Cheng, “Generalization of Mrs. Gerber’s Lemma,” *Communications in Information and Systems*, vol. 14, no. 2, pp. 79-86, 2014.
6. R. K. Panta, R. Jana, F. Cheng, Y.-F. R. Chen, and V. A. Vaishampayan, “Phoenix: Storage Using an Autonomous Mobile Infrastructure,” *IEEE Transactions on Parallel and Distributed Systems*, vol. 24, no. 9, pp. 1863-1873, Sept. 2013.
7. T. Wu and F. Cheng, “The Structures of Zero-divisor Semigroups with Graph  $K_n \circ K_2$ ,” *Semigroup Forum*, vol. 76, Springer (2008), pp. 330-340.

## Conference Papers

1. Y. Geng and F. Cheng, “Duality between finite numbers of discrete multiple access and broadcast channels,” *2015 IEEE Information Theory Workshop*, Jeju, Korea (ITW 2015).
2. Q. Chen, F. Cheng, T. Liu and R. W. Yeung, “A Marginal Characterization of Entropy Functions for Conditional Mutual Independent Random Variables,” *2015 IEEE International Symposium on Information Theory*, (ISIT 2015).
3. F. Cheng, “Optimality of Routing on the Wiretap Network with Simple Network Topology,” *2014 IEEE International Symposium on Information Theory*, (ISIT 2014).
4. F. Cheng and Y. Geng, “Convexity of Fisher Information with Respect to Gaussian Perturbation,” *2014 Iran Workshop on Communication and Information Theory*, (IWCIT 2014).
5. F. Cheng, R. W. Yeung and K. W. Shum, “Imperfect Secrecy in Wiretap Channel II,” *2012 IEEE International Symposium on Information Theory*, (ISIT 2012).
6. F. Cheng and R. W. Yeung, “Performance Bounds in Secure Network Coding,” *2011 IEEE International Symposium on Network Coding*, (NetCod 2011).

## Referees

1. Prof. Raymond Yeung, IE and INC, CUHK (Thesis Supervisor)
2. Prof. Venkat Anantharam, EECS, UC Berkeley
3. Prof. Babak Hassibi, EE, Caltech
4. Prof. Chandra Nair, IE, CUHK
5. Prof. Sid Jaggi, IE, CUHK
6. Dr. Yih-Farn Robin Chen, AT&T Labs - Research
7. Prof. Tie Liu, ECE, TAMU
8. Prof. Vincent Tan, ECE, NUS